Service Tools

C-Ring Removal Tool
90.356

To remove the C-style retaining ring safely in a single controlled motion.

C-Ring Installation Tool
90.352 (U.2600-U.9600)
90.352.10000 (U.20000)

To insert the C-style retaining ring into the retaining ring groove.

Standard Load Cell
90.300.2600 (Models: U/UH/UT/UX.2600)
90.300.4600 (Models: U/UH/UT/UX.4600)
90.300.6600 (Models: U/UH/UT/UX.6600)
90.300.9600 (Models: U/UT/UX.9600)
90.300.20000 (Models: U/UX.20000)

When used with a Portable Test Stand, the Standard Load Cell gives precise measurement of gas spring charging pressure. Each model requires its specified load cell. For more information contact DADCO.

Portable Test Stand
90.305.3

Use the Portable Test Stand in conjunction with a Standard Load Cell for precise measurement of gas spring force on contact. Excludes use with the U.9600 and U.20000. For more information request bulletin 97B121.

Valve Bleed Tool
90.360.4

Use the DADCO Valve Bleed Tool to slowly discharge a spring to the desired pressure.

Port Servicing Tool
90.320.8

To perform all necessary servicing to the valve compartment.

Quick Disconnect Charging Assembly
90.310.040

Use the DADCO Quick Disconnect Charging Assembly with the Filler Valve or Pressure Analyzer to charge self-contained gas springs, or with a DADCO Control Panel for charging linked systems. For more information contact DADCO.

DADCO Pressure Monitor
90.421.1 (120 VAC) – bulletin B00136
.2 (240 VAC) – bulletin B01115A
.2D (24 VDC, SPDT) – bulletin B00134A

The DADCO Pressure Monitor indicates if pressure drops below a pre-set level, alerting the press controller to shut down the press. The shutdown point is adjustable between 15 and 200 bar (200-3000 psi). For additional information request the appropriate bulletin.

Removal Sleeve
90.340.01500 (Models: U/UH/UT/UX.2600)
90.340.03000 (Models: U/UH/UT/UX.4600)
90.340.05000 (Models: U/UH/UT/UX.6600)
90.340.07500 (Models: U/UT/UX.9600)

To position the cartridge assembly below the C-ring groove when assembling or disassembling a gas spring.

T-Handle
90.320.2 (M8)
90.320.10 (M10)

To remove the piston rod when disassembling and position correctly when reassembling.

Quick Disconnect Charging Nipple: Self Contained
90.310.143 (M6 Port)
90.310.111 (G 1/8 Port)

Use the DADCO Quick Disconnect Charging Nipple to charge DADCO Nitrogen Gas Springs.

90.310.143

90.310.111

DADCO Pressure Analyzer
90.315.5 (M6 and G 1/8 bits)

Use the DADCO Pressure Analyzer to easily charge, discharge, and gauge the pressure in DADCO's U Series. This tool can take the place of the Valve Bleed Tool, Standard Load Cell, Quick Disconnect Filler Valve, and Portable Test Stand. For more information request bulletin B01133D.

Digital Load Cell
90.305.BG (Meter)
90.305.LC.50 (222 kN Load Cell)

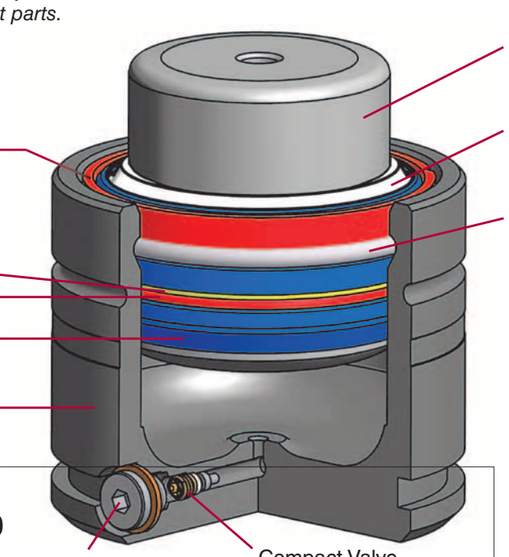
The DADCO Digital Load Cell Meter can display force in Newtons, Kg or lbs. The 90.305.LC.50 (supplied with the connector) may be used to measure gas spring force up to 50,000 lbs. Other digital load cell units are available, for more information request bulletin B04106B.

DADCO Electronic Pressure Monitors

DADCO's Electrical Pressure Monitors indicate if pressure drops below a preset level, alerting the press controller to shut down the press. They are available in a variety of configurations to suit a variety of applications. For more information request bulletin B10105 or contact DADCO.

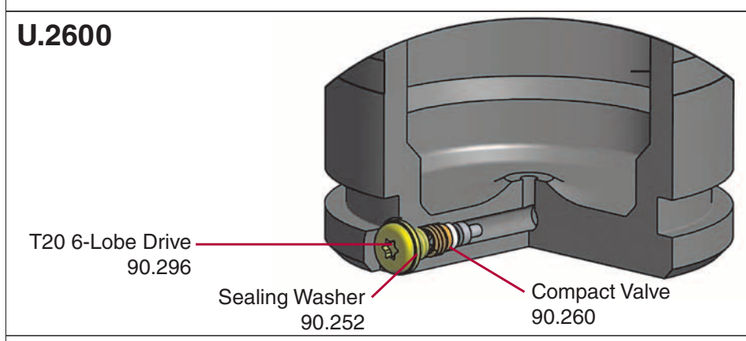
Parts List

All DADCO gas springs are permanently marked with model and serial number. Please refer to these numbers for corresponding repair kits when ordering replacement parts.

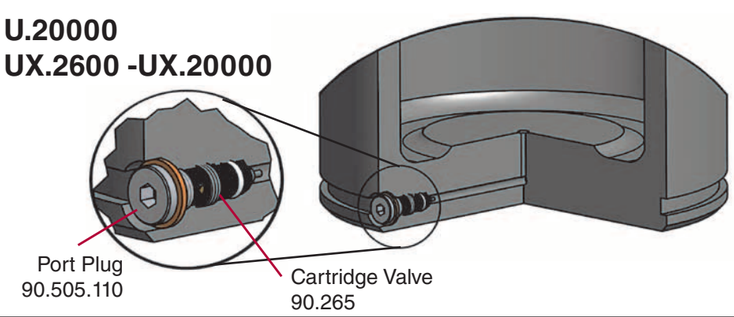


U.4600 - U.9600
UH.2600 - UH.6600
UT.2600 - UT.9600

U.2600



U.20000
UX.2600 -UX.20000



Repair Kits
Includes a fully assembled cartridge, dust cover, bottle of assembly oil and a maintenance manual.

Series				Model	Kit Number
UH	UT	UX	U	2600	90.108.2600
UH	UT	UX	U	4600	90.108.4600
UH	UT	UX	U	6600	90.108.6600
–	UT	UX	U	9600	90.108.9600
–	–	UX	U	20000	90.108.20000

Ordering Example:

Models: 02600. 04600, 06600, 09600, 20000

90.215. U. 2600. 025
Part No. Series Model Stroke (mm)

Bulletin No. B06127A

Comprehensive Guide

This service manual is a simple step-by-step maintenance guide for DADCO's **Ultra Force®** and **Ultra Force Extended®** Nitrogen Gas Springs Models: U.2600–U.20000 / UH.2600–UH.6600 / UT.2600–UT.9600 / UX.2600–UX.20000.

Proper repair requires careful examination of all component parts and replacement of any that are worn or damaged. All DADCO replacement parts are available from factory stock.

Typically, DADCO Nitrogen Gas Springs can be rebuilt in less than ten minutes by replacing only one part, the factory pre-assembled cartridge assembly.

After reviewing this maintenance guide, if you require any additional training or have any questions please contact DADCO for assistance.

Note: *All DADCO gas springs are permanently marked with model and serial number. Please refer to these numbers for corresponding repair kits and when ordering replacement parts.*

All DADCO bulletins and catalogs are available for download from our web site, www.dadco.net.

DADCO®

Nitrogen Gas Spring Maintenance Instructions
Ultra Force® and Ultra Force Extended® Models:

U.2600–U.20000
UH.2600–UH.6600
UT.2600–UT.9600
UX.2600–UX.20000

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CAUTION: Always wear safety goggles when performing any maintenance work.

U Series Nitrogen Gas Spring Repair Instructions

I. Exhausting Pressure

Self-Contained Mode

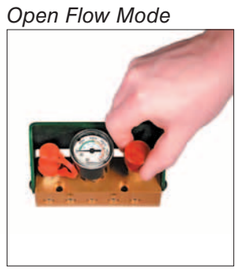
1. When exhausting pressure, position the gas spring with the port up for safety.

2. Remove the Protective Screw, *(90.505.110 or 90.296)*. Retain parts for use during reassembly.

3. Keeping face and hands clear of the port, use the Valve Bleed Tool, *(90.360.4),* or Port Servicing Tool, *(90.320.8),* to depress the Compact Valve stem, *(90.260),* or Cartridge Valve, *(90.265)*. Cover the port with a cloth to absorb discharge.

4. After all of the gas pressure is exhausted, be sure that the piston rod will freely retract into the tube manually. If not, try depressing the valve again. If still unsuccessful **stop** and contact DADCO.

Open Flow Mode



1. Exhaust nitrogen gas by opening the bleed valve on the control panel.

2. Verify that all pressure is relieved by manually retracting the piston rod into the tube. If the rod will not fully retract release the remaining pressure. If still unsuccessful **stop** and contact DADCO.

3. Unthread the service fitting and wipe with a clean cloth. Proceed to "II. Port Maintenance" *Open Flow Mode* step 1.

II. Port Maintenance

Self-Contained

1. Generally the valve does not need replacing. Only if the valve appears damaged, is leaking pressure or sticking proceed to step 2, otherwise leave the valve undisturbed and proceed to "III. C-Ring Removal."

2. Remove the Compact Valve, *(90.260),* or Cartridge Valve, *(90.265)*, by unscrewing it with the Port Servicing Tool, *(90.320.8).*

3. Thread a new Compact Valve, *(90.260), or Cartridge Valve (90.265),* into the port until it fits snugly on the seat. Avoid over torquing the valve.

Open-Flow Mode

1. Check the port for deposits or burrs and clean thoroughly. Inspect the service fitting and replace if it shows signs of damage. Lubricate threads and seals on the fitting and thread the service fitting into the gas spring port.

III. C-Ring Removal

1. Stand the gas spring upright. Place a removal sleeve, *(90.340.x),* longer than the stroke over the rod. Tap the sleeve until the Dust Cover, *(90.246.U.x),* is loosened. Remove the Dust Cover and discard.

2. Reposition the DADCO Removal Sleeve and only continue tapping until the rod cartridge assembly is slightly below the retaining ring groove.

3. Remove the C-style Retaining Ring, *(90.285.x.*), using a C-Ring Removal Tool, *(90.356)* . Position the hooked end of the tool below the c-ring. For best results locate the tool near either end of the c-ring.

4. Once the hooked end of the tool is firmly seated below the c-ring, begin pushing it toward the outside of the gas spring can. The handles will close naturally, and the c-ring will be extracted as you complete this motion. For a detailed explanation of c-ring removal see bulletin 97B110.

IV. Rod & Cartridge Removal

1. To remove the Rod and Cartridge Assembly thread a T-Handle, *(90.320.2 or 90.320.10),* into the rod end. Pull the entire assembly out of the tube. The spring body can be held in a vise (with soft jaws) while pulling out the assembly.

2. Once the cartridge and rod are removed from the Tube Assembly slide the cartridge off the rod and discard. Retain the rod for inspection and reuse.

V. Cleaning & Inspection

1. Lightly polish the rod surface with an emery cloth (600 grit). Inspect the finish of the rod for any scratches or gouges. If the rod is damaged it must be replaced.

2. Inspect the Tube Assembly for any damage, especially around the mouth of the Tube Assembly. Lightly polish out any scratches at the mouth of the Tube Assembly to avoid damaging seals during the reassembly process. If damage to the Tube Assembly is severe it must be replaced. Wash, clean and dry the inside thoroughly.

NOTE: Before starting the reassembly process, be sure the repair area is clean. It is imperative that the gas spring be free of all contaminants upon reassembly. If this precaution is not taken it may lead to contamination and premature gas spring failure.

VI. Cartridge Replacement and Reassembly

1. Choose the appropriate repair kit. The repair kit number needed is laser marked on the back of the Tube Assembly. **NOTE:** Repair kits are not interchangeable among models.

2. Position the Cartridge Assembly over the rod, making sure that the wiper end is facing up. While holding the cartridge vertically slide the cartridge down the rod to the rod retainer. Be careful not to force the cartridge at an angle as the seal could become dislodged.

3. Lubricate the inside wall of the tube with all of the DADCO Assembly Oil.

4. Place the rod and cartridge into the Tube Assembly. Use the Valve Bleed Tool, (90.360.4), or Port Servicing Tool, (890.320.8), to depress the needle valve to release any back pressure. Position the top of the cartridge just below the retaining ring groove.

5. Insert the C-Style Retaining Ring in the retaining ring groove using a DADCO C-Ring Installation Tool, *(90.352 or 90.352.10000).* Be sure the C-Style Retaining Ring is fully seated in the retaining ring groove.

6. Thread the T-Handle, *(90.320.2 or 90.320.10),* into the end of the piston rod. Pull up on the T-Handle until the top of the cartridge is completely past the c-ring. The rod must seat the cartridge assembly fully before charging. The housing should be flush with the end of the cylinder. Make sure the rod is extended to its proper stroke length. (Depress the needle valve to facilitate full rod extension.)

VII. Charging

Note: For best results, use the DADCO Charging Assembly which has a shut off valve and Quick Disconnect at the end of the hose.

Self Contained

Self contained spring with a 90.310.143 shown.

1. Thread the Quick Disconnect Filler Valve, *(90.310.143 or 90.310.111),* into the port of the gas spring. Connect the female end of the charging assembly to the charging nipple. The DADCO Pressure Analyzer, *(90.315.5),* can also be used for charging, discharging and gauging pressure in self contained gas springs.

Open-Flow Mode

1. Thread the DADCO Pressure Analyzer (90.315.5) into the port of the gas spring and open the valve. For a detailed explanation of how to use the DADCO Pressure Analyzer see bulletin B01133D. Connect the female end of the charging assembly to the male quick disconnect.

2. Open the main valve on the nitrogen tank. Set the desired charging pressure on the regulator. Do not exceed the maximum charging pressure of 150 bar (2175 psi).

3. Slowly open the shut-off valve at the end of the charging hose and allow the gas spring to reach the desired charging pressure.

4. After the spring has been charged to the desired pressure, CLOSE THE HOSE SHUT-OFF VALVE AND TANK SHUT-OFF VALVE. Disconnect the charging assembly from the charging nipple. The small amount of nitrogen trapped between the shut-off valve and filler valve will bleed off as you disconnect the fitting.

5. Check for leaks at the top of the tube around the rod and at the base around the valve compartment by using mineral oil or water to test for leaks. Verify the pressure of self contained spring models 2600–6600 with a DADCO Load Cell using a DADCO Portable Test Stand, *(90.305.3)*. Verify the pressure of self contained spring models 9600 and 20000 using a DADCO Load Cell and an arbor press. *NOTE: If spring is open-flow mode, then a DADCO Pressure Analyzer,(90.315.5), may be used to verify pressure and must remain in place during testing.*

6. Install the new Dust Cover, *(90.246.U.x).* Tap with a soft mallet until the top of the Dust Cover rests flush with the top of the can. The rod wiper should be visible.

Self Contained

7. Securely re-install the Protective Screw, *(90.505.110 or 90.296).*

VIII. Adjusting Gas Spring Pressure

1. To increase the spring pressure, thread the Quick Disconnect Filler Valve, *(90.310.143 or 90.310.111),* into the port, set the regulator to the desired pressure and fill. DADCO's Pressure Analyzer, *(90.315.5),* may also be used to adjust pressure.

2. To decrease the gas spring pressure, depress the valve stem using a DADCO Valve Bleed Tool, *(90.360.4)*, or a DADCO Pressure Analyzer, *(90.315.5).*

IX. Linked Systems

After testing all springs for leaks, the open-flow springs are ready to be re-linked in the system. If possible, once the springs are all linked back to the control panel, leave the system to sit fully charged overnight. If pressure has dropped indicating a leak verify that each connection is tight and test each fitting for a leak.

Contact DADCO for information on converting a self-contained DADCO Nitrogen Gas Spring to a linked system.

NOTE: DADCO U/UH/UT/UX Series Nitrogen Gas Springs should not be linked with the valve installed.